

Crossroads

ONE of the special features of the 1978 elections was the emergence of, if not dominance by, single-issue groups. The impact on candidates for elected office was dramatic. No longer could candidates merely hide behind a bland party platform which sought the best compromise between the various special interest groups of their constituency; instead, they had to bend enormously to the pressures of shrill single-issue groups. Why? The answer is not clear, but my observation is that it is due primarily to the media. After all, news is news, and the shriller the single-issue group, the better the newspaper copy. Unfortunately, they *all* seem to be against technology and through elective officials their power is increasing at a frightening rate. How else can one explain some of the acts of Congress to protect a previously undiscovered tiny fish or a weed?

I have a particular view on how this all got started—and a vision of how it might end. My image is based on the dynamics of who controls society. I have given the name Mandarins to the group which was firmly in control before World War II. This is not to slight in any way our friends of Chinese descent, but rather to emphasize the parallel—that is, the worship of classical Muses and the disdain for technical progress. They controlled the majority of universities and, indirectly, society. The advent of World War II shook their position of strength, with the emergence of nuclear weapons, the physicist, and the concept that science or technology could change the nature of our society in a revolutionary fashion, in contrast to the previous snail-pace technical evolution. But the number of nuclear technologists was small and, although they represented a threat to the Mandarins, the latter continued to maintain control. That changed precipitously, starting in 1957, with space technology and the race for the moon (and for everywhere else for that matter). The number of technical personnel who are needed for the space effort outnumbered any previous effort of that type. This represented a great opportunity for colleges and universities to share in a program of that magnitude, both by training students and by the acceptance of funds to perform research, to expand faculties, and to finance education. In the colleges which made this transition, the Mandarins lost control, and the entire country soon became dominantly space-oriented. The voices against nuclear missiles and space exploration were silent, probably because the race was based on an emotional appeal to keep America first. Who could argue against that? So, technology was supreme.

Today, of course, technology is no longer paramount. My personal recollection is that the first crack appeared with the decision to proceed with an ABM for the so-called Sentinel System, which was originally to be a light umbrella to protect cities; but, for the first time, there was serious dissension among the technocrats on two bases: first, the U.S. ABM could be destabilizing to detente; and second, it might not work, because of countermeasures which the offense could take, such as penetration aids or precursor nuclear bursts to blind radars, etc. Perhaps more important, as the Army started to clear the land for these sites in the suburbs of several cities, the local population picketed because they did not want nuclear targets or nuclear bombs in their backyards. Using the technical arguments supplied by the adverse technocrats, they were successful in stopping the Sentinel Program. Thus, a small but determined single group had stopped the entire U.S. Army and the United States Government. The lesson was simple: any single-interest group could have enormous impact, if it was sufficiently vocal; and nothing was beyond its reach. The rest is history.

Today it is difficult for government to act for the common good; instead, each politician must carefully avoid stepping

on special territory for fear of being attacked as being just plain evil; and the politicians act to ban anything that sounds dangerous, thereby slowing down technology as well. Although some Mandarins now admit faulty interpretation of data which led them on some of their original crusades, the momentum has intensified in a campaign to correct everything in sight. However, these efforts are being frustrated by the constant emergence of new technologies. The single-issue groups firmly recognize that it is necessary to slow down and stop new technology if they are to maintain or increase their power.

If all this sounds remote to the AIAA, we need only to consider the potential impact of the Bucy report because of the interesting similarity that it raises. Its thesis is that the export of technology should be sharply restricted, if this technology can be of direct military benefit to U.S. adversaries. The United States always has controlled the export of military hardware and drawings, and has been careful concerning special manufacturing techniques, but there exists another channel—namely, that of “know-how.” This can be loosely defined as the technology for making key components for military hardware and can take two forms—namely, a special manufacturing technique (which cannot be reverse-engineered) or the special ways that various physical principles are combined to achieve superior performance.

Without attempting to prejudice the issue, to me there are many difficulties in controlling the dissemination of technology, just because it only takes *one* to provide a leak, as has been demonstrated historically by the Dutch tulip bulb, the English power loom, etc.; but there is a more troublesome aspect, at least to me. It appears, now that we have achieved a certain level of technologies, that the Bucy report strategy for superiority is to try to hold onto it by simply building a fence around it. Of course, there is an implied insidious side benefit; since we are preserving our best technology, and no one else has it, we need not develop new technology. In this respect, the impact of the Bucy report is anti-technology.

There are several arguments against the above controls. First, there are innovative, highly trained technologists all over the world—the U.S. leads in only a few technologies. In fact, we are currently being flooded with commercial products of superior performance. I would rather see the United States adopt, improve, and become competitive. Second, because of leakage, walls rarely work; witness the Great Wall of China and the Maginot line. Third, there is a different strategy—namely, *stay ahead* by continuing to develop technology at a faster rate than our adversaries, because what they learn from us rapidly becomes obsolete. There is a strong economic parallel in these choices, in the wealth of nations—gold, which is useful for making purchases, or the capability to produce goods and services. England chose the latter and initiated the industrial revolution; Spain chose the former. The analogy with technology is simple—the choice of preserving present technology or increasing our capacity to produce new technology.

On the other hand, if there continue to be major impediments to U.S. technical progress, then it may become necessary to prevent dissemination of our technology by restricting the distribution of technical data and of this journal as well. We can only hope that the groups who are presently pondering this question have the wisdom and foresight to come to an answer that will resurrect technology, rather than embalm it, and that the Mandarin approach will be rejected.

It is also my opinion that these issues cannot be addressed by opposing camps who each issue their own brief. Instead, satisfactory resolution requires a direct adversary procedure,

such as a science court. Confrontation and dialogue are needed to obtain convergence; polemic missives usually obscure the real issues. In consonance with my opinion, during the coming year I hope to be able to maintain our policy of dialogue on technical questions in the pages of this journal.

Change

The *AIAA Journal* is initiating a small change in its cover format. In the past, papers were grouped separately from the Technical Notes and Technical Comments. The papers were then loosely grouped according to discipline. This loose organization, however, was not conducive to rapid identification of the discipline by its adherents, causing some dissatisfaction. I therefore surveyed a few other multidiscipline journals and discovered that at least one of them was organized along disciplinary lines, using appropriate subject categories. Acting upon my suggestion, the Publications Committee has approved a similar organization, based on the ten major subject index topic titles. I have

already polled my Associate Editors, but I also would enjoy receiving communications directly from you, the readership, on your reaction to this new format.

Appreciation

We wish to express our appreciation to the hundreds of reviewers, whose names are listed below, for their help in maintaining the technical quality of this journal. Thanks also to Ruth F. Bryans, Administrator, Scientific Publications; Ann Huth, Assistant Administrator, Scientific Publications, who has retired; Elaine J. Camhi, Managing Editor; David L. Staiger, Administrator, Publications Services; and Carol Ohrbach, Manager, Production. They have each scored their own "firsts" in publication technology.

I also wish to thank Lucien Schmidt for his services as Associate Editor and welcome Dr. V. B. Venkayya as a new Associate Editor in the area of structures research.

George W. Sutton
Editor-in-Chief

Reviewers for *AIAA Journal*, September 1, 1977 - August 31, 1978*

Abdelhamid, Amr N.	Billig, Frederick S.	Christiansen, Walter H.	Emanuel, George	Ham, Norman D.
Ackerberg, R.C.	Binder, John D.	Clark, D.R.	Ettenberg, Michael	Hammitt, Andrew G.
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Adams, John C.	Blackwelder, R.	Classen, Robert J.	Fejer, Andrew A.	Harsha, Philip T.
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Adcock, J.B.	Bloom, Martin H.	Cohen, Gerald A.	Fendell, Francis E.	Hassig, Hermann J.
Ahuja, Krishan K.	Blottner, Frederick G.	Cole, Julian D.	Fink, Martin R.	Haviland, John K.
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Almroth, B.O.	Boni, A.A.	Collins, Donald J.	Flaggs, Don	Hegemier, G.A.
Amiet, Roy	Bott, J.F.	Connaughton, J.W.	Fleury, Claude	Heller, R.A.
Anderson, Gerald M.	Bradbury, L.J.S.	Cooper, G.W.	Fontijn, Arthur	Herrmann, Leonard R.
Anderson, John D.	Bradshaw, Peter	Corcos, G.M.	Forester, Clifford K.	Hersh, Alan S.
Anderson Mel S.	Brandt, Alan	Covert, E.E.	Foss, John F.	Herty, C.H., III
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Ashkenas, Irving L.	Breedlove, William J.	Cuffel, Robert F.	Free, B.A.	Hirt, C.W.
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Babcock, Charles D.	Brodkey, R.S.	Dafora, G.	Gad-EI-Hak, Mohamed	Hoggard, W.C.
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Baker, J.R.	Brush, D.O.	Davy, William C.	Gelles, Stanley H.	Hohl, F.
Baker, Richard L.	Bryson, Arthur E., Jr.	Dawbarn, Ron	George, W.K.	Holman, Jack
Baldwin, Barrett S.	Bullock, Richard	Dayman, Bain, Jr.	Ghia, Kirti N.	Holmes, Bayard S.
Ballhaus, William F., Jr.	Burnside, Charles	Deissler, Robert G.	Giesing, Joseph P.	Holst, Terry L.
Balsa, Tom F.	Busch, Ray	Deiwert, George S.	Glasgow, Edsel R.	Homicz, Gregory
Barnwell, Richard	Campbell, Michael	Demetriades, Anthony	Glick, Robert L.	Horstman, C.C.
Batt, Richard G.	Cantin, G.	Dickson, Larry	Gogineni, P.R.	Horton, T.E.
Bauer, Andrew B.	Carlson, Leland A.	Dimotakis, Paul	Goldhammer, Mark I.	Houbolt, John C.
Baumeister, Kenneth J.	Carmichael, Ralph L.	Dong, Stanley	Goldschmied, Fabio R.	Howe, M.S.
Bayazitoglu, Y.	Carr, Lawrence W.	Dosanji, D.S.	Gough, P.S.	Howell, John R.
Bechert, D.	Carta, Franklin O.	Dowell, Earl H.	Graf, James	Hsiao, K.H.
Beck, James V.	Caruthers, John E.	Dragoo, Alan L.	Gran, R.L.	Hseih, T.
Beckmeyer, Roy J.	Carver, Dwayne B.	Dugundji, John	Granville, Paul	Huang, Nai Chien
Beckwith, Ivan E.	Caughey, D.A.	Duhig, James J., Jr.	Gregory, Gerald L.	Hubbatt, James E.
Beddini, Robert	Caughey, T.K.	Dunn, Michael G.	Griffin, Owen M.	Hughes, Thomas J.R.
Belytschko, Ted	Caveny, Leonard H.	Dwyer, H.A.	Griffith, Billy J.	Hung, Ching-Mao
Berger, Stanley A.	Chadwick, Richard	Eastep, Franklin E.	Grodzka, Philomena	Hunt, David A.
Berman, Alex	Chan, Y.Y.	Edelstein, F.	Guenther, Rolf A.	Hurst, C.
Bert, Charles W.	Chapkis, Robert L.	Edwards, D.K.	Hadji-Sheikh, A.	Hussain, Fazle
Beuther, P.	Cheng, Hsien K.	Edwards, Gary R.	Hadley, Steven	Hussaini, M.Y.
Bhat, W.V.	Chien, John	Edwards, John W.	Hafez, Mohamed	Iversen, James D.
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Bier, Milan	Chipman, Richard	Ehrlich, Louis	Hahn, H. Thomas	Jacobs, J.
Bilanin, Alan	Chou, Pei Chi	Eisenberg, Norman A.	Hall, Bertrand M.	Jakubowski, A.K.

*Because it is difficult to include the reviewers from September, October, November, and December 1978 in this issue of the Journal, they will be listed with the reviewers for 1979, in the January 1980 issue.

- Jameson, Antony
Johnson, Edwin G.
Johnson, Wayne
Johnston, James P.
Jones, David I.C.
Kaiser, John
Kana, Daniel D.
Katsanis, Theodore
Kaufman, Harold R.
Kaufman, Louis G.
Kaups, Kalle
Keller, H.
Kelly, W.H.
Kemp, Nelson H.
Khot, N.S.
Kibens, Valdis
Kinney, Robert
Kinslow, Max
Kiusalaas, J.
Ko, Denny R.S.
Kovaszny, Leslie S.G.
Kraichnan, R.H.
Kreith, Frank
Krier, Herman
Kumar, A.
Kuo, Kenneth K.
Kurosaka, Mitsuru
Kussoy, Marvin J.
Kutler, Paul
Kvaternik, Raymond G.
Lakshminarayana, Budugur
Landahl, Marten T.
Lansing, Donald L.
Laufer, John
Lavan, Zalman
Lederman, Samuel
Lefebver, A.H.
Leissa, Arthur W.
Lencioni, D.E.
Levy, Roy
Li, Peng-Chien
Libby, Paul A.
Lin, T.H.
Lissaman, Peter
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Liu, T.M.
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McDonald, Harry
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Modest, M.F.
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Moffat, Robert J.
Mokry, Miroslav
Monforton, Gerard R.
Mons, Robert
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Moretti, Gino
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Morino, Luigi
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Nelson, Richard B.
Nemat-Nasser, S.
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Nielson, P.E.
Nixon, David
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Oh, Y. Hwan
Ohrenberger, John T.
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Packman, A.
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Pierce, Felix J.
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Rajan, S.
Rakich, John V.
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Reeves, Barry L.
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Rodi, Wolfgang
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Roshko, Anatol
Rubesin, Morris W.
Rubin, Stanley G.
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Rund, H.
Russell, David A.
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Sanic, William S.
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Simpson, James H.
Simpson, Roger L.
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Smith, David C.
Smith, Hadley
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Tempelmeyer, Kent E.
Teodosiadis, R.
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Traci, Richard M.
Tulin, M.P.
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Van Dyke, Milton
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Verdon, Joseph M.
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Vidal, Robert J.
Vinokur, Marcel
Viskanta, Raymond
Viswanathan, A.V.
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Warhaft, Zellman
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Wentz, W.H.
Werle, M.J.
Westbrook, C.K.
Westkaemper, J.C.
Westwater, J.W.
White, Frank M.
Whitelaw, J.H.
Whitfield, David L.
Whitney, James
Wigeland, Roald A.
Wilcox, D.C.
Williams, Forman A.
Williams, W.D.
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Witte, L.C.
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Wu, E.M.
Wu, Jain Ming
Yan, M.J.
Yanta, William J.
Yen, Jing G.
Yoshihara, Hideo
Yu, N.J.
Zeiberg, Seymour L.
Ziv, Moche
Zorunski, W.E.
Zukas, Jonas A.
Zupnik, T.F.